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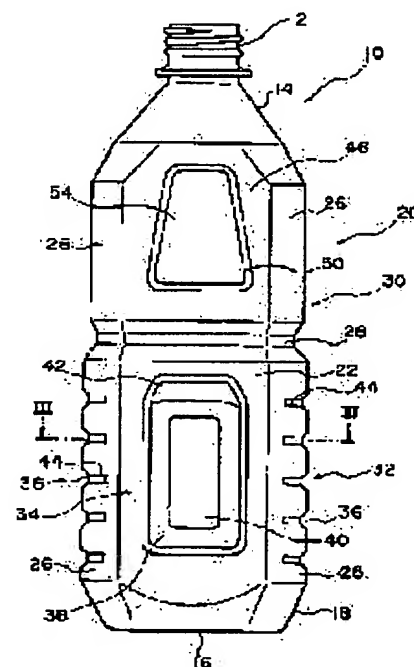
(72)Inventor : KOBAYASHI HIDEYUKI

(54) BIAXIALLY STRETCHING BLOW MOLDED CONTAINER

(57)Abstract:

PURPOSE: To prevent wall faces from expanding at the time of filling of contents on heating and prevent wall faces other than decompression panels from denting and deforming at the time of volume reduction and decompression.

CONSTITUTION: A container has a rectangular cross section and chamfers 26 at intersections of wide wall parts 22 and narrow wall parts 24. A decompression deformation part 34 is provided at a lower side of nearly the central part in the vertical direction of the wide wall part 22. Ranging over the narrow wall part and the chamfers 26 at its both sides, ribs 36 are formed being dented. The depth of the rib at the central area in the longitudinal direction of the rib 36 is set to be shallower than the depth of the ribs at its both end areas. Thus, when a decompression deformation force exceeding a fixed pressure reducing value is added to the decompression deformation part 34, the part of the ribs 36 in the narrow wall part 24 is deformed with decompression, so that deformation of the outer surface of the wide wall part 22 can be prevented.



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CLAIMS

[Claim(s)]

[Claim 1] In the biaxial-stretching-blow-molding container which prepared the reduced pressure variant part at the time of reduction reduced pressure in said broad height direction abbreviation mid-gear bottom of a wall among the walls which have a chamfer in the intersection of a broad wall and a narrow wall, and were fabricated by the cross-section abbreviation square shape The biaxial-stretching-blow-molding container characterized by having the rib hollowed over said narrow wall and the chamfer of the neighbors, and making the rib depth of the longitudinal direction central field of said rib shallower than the rib depth of the both-ends field.

[Claim 2] It is the biaxial-stretching-blow-molding container characterized by the rib of said both-ends field being extended by the narrow wall from the chamfer in claim 1.

[Claim 3] The inside of the wall which has a chamfer in the intersection of a broad wall and a narrow wall, and was fabricated by the cross-section abbreviation square shape, In the biaxial-stretching-blow-molding container which prepared the reduced pressure variant part which has the crevice which carries out reduced pressure deformation at the time of reduction reduced pressure in said broad height direction abbreviation mid-gear bottom of a wall The biaxial-stretching-blow-molding container which has the rib hollowed over said narrow wall and the chamfer of the neighbors, and is characterized by the rib depth of a longitudinal direction central field being shallower than the depth of the crevice of said reduced pressure variant part at least, and carrying out said rib.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] Especially this invention relates to the wall surface structure of a biaxial-stretching-blow-molding container about a biaxial-stretching-blow-molding container.

[0002]

[Description of the Prior Art] As everyone knows, the container (henceforth a bottle) by which biaxial stretching blow molding was carried out using polyethylene terephthalate (PET) has many advantages in a gas-proof barrier nature, transparency, tough nature, and health side etc.

[0003] By the way, some which are called a heat-resistant bottle are in one of the bottles obtained by biaxial stretching blow molding. This heat-resistant bottle is the bottle which can be filled up with contents, such as juice made into the elevated temperature for sterilization.

[0004] However, with such a bottle, when the contents by which elevated-temperature restoration was carried out cool down, the interior may serve as a reduced pressure ambient atmosphere by reduction of contents, and a bottle wall may carry out reduced pressure deformation. The deformation by such reduction reduced pressure will cause change of the appearance configuration of the whole bottle, and will spoil the commodity value of a bottle.

[0005] Then, deformation according to reduction reduced pressure in a part of wall is made to perform as a cure when such reduction reduced pressure occurs, and the structure of preventing deformation of the appearance configuration of the whole bottle is adopted.

[0006] This structure is called a reduced pressure panel and the structure which established two or more crevices which became depressed towards the method of the inside of a bottle in the wall front face of a bottle is usually used. Thereby, when reduction reduced pressure occurs, form status change-ization in other parts of a bottle can be prevented by carrying out reduced pressure deformation only of the crevice.

[0007] On the other hand, there are some which have a rectangular cross-section configuration as an example in the bottle obtained by the above-mentioned biaxial stretching blow molding on a design. In addition, the cross section of the direction where the cross section in this case is as right-angled as the lengthwise direction of a bottle is said.

[0008] And preparing a reduced pressure panel also to the bottle of such the rectangular section is performed, and when it is a square cross section, the reduced pressure panel is formed in the wall surface of the long side which bends in the case of the rectangular section, and is easy to deform into the wall surfaces of all four sides again, respectively.

[0009] Generally this reduced pressure panel is formed in two upper and lower sides in the wall of a bottle.

[0010] Moreover, there is also a thing which a chamfer is formed in the location where each side crosses, and each side was made to follow in this kind of bottle. It is a reason to secure the reinforcement of the location where each side which makes a bottle corner, i.e., a wall surface, crosses as a reason for forming this chamfer. Therefore, let the cross-section configuration of such a bottle be an octagon.

[0011]

[Problem(s) to be Solved by the Invention] However, among the above-mentioned containers, since it is carried out almost equally [the reduced pressure deformation at the time of reduction reduced pressure / abbreviation on the wall surface of each side], there is little change of an appearance configuration, but when it is the bottle with which the neighboring die length is different like the rectangular section especially, in the case of a square cross section, the wall surface of the short side may bulge, and an appearance configuration may change to it.

[0012] That is, it is easy to carry out bulge deformation according to heat deformation of fluid pressure and

a wall, and at the time of subsequent cooling, a wall is cratered to the method of the inside of a bottle, and is easy to deform into it with reduced pressure at the time of elevated-temperature contents restoration. In this case, although a reduced pressure variant part deforms since it tends to crater the direction of a broad wall, a narrow wall is cratered very much and cannot deform easily. Therefore, when bulge deformation is carried out, a condition as it is will be maintained.

[0013] Then, when forming the transverse rib in the narrow wall, the bulge deformation at the time of heat restoration was prevented. However, in this narrow wall, since it cannot count upon reduced pressure deformation at all, the role of other walls and the broad wall especially formed caudad becomes large.

[0014] By the way, when deformation by the external force by the case where heat restoration temperature is set up more highly than a schedule, the impact under conveyance, etc., or the pressure at the time of grasping by the consumer started a broad wall with many this burden, fields other than the reduced pressure variant part of a broad wall deformed, and there was a problem of stopping being able to carry out self-reset.

[0015] Especially the deformation at the time of reduction reduced pressure of the wall surface located between such reduced pressure panels was seen near the upper part of a lower reduced pressure panel in many cases.

[0016] This invention was made paying attention to the above-mentioned trouble, and the purpose is in offering the biaxial-stretching-blow-molding container which can prevent that wall surfaces other than a reduced pressure panel dent for it and carry out the form status change form of it at the time of reduction reduced pressure while preventing that a wall surface bulges at the time of heating restoration of contents etc.

[0017]

[Means for Solving the Problem] In order to attain said purpose, the 1st invention has a chamfer in the intersection of a broad wall and a narrow wall. In the biaxial-stretching-blow-molding container which prepared the reduced pressure variant part at the time of reduction reduced pressure in said broad height direction abbreviation mid-gear bottom of a wall among the walls fabricated by the cross-section abbreviation square shape It has the rib hollowed over said narrow wall and the chamfer of the neighbors, and is characterized by making the rib depth of the longitudinal direction central field of said rib shallower than the rib depth of the both-ends field.

[0018] 2nd invention is characterized by the rib of said both-ends field being extended by the narrow wall from the chamfer in the 1st invention.

[0019] The 3rd invention has a chamfer in the intersection of a broad wall and a narrow wall. In the biaxial-stretching-blow-molding container which prepared the reduced pressure variant part which has the crevice which carries out reduced pressure deformation at the time of reduction reduced pressure in said broad height direction abbreviation mid-gear bottom of a wall among the walls fabricated by the cross-section abbreviation square shape It has the rib hollowed over said narrow wall and the chamfer of the neighbors, and is characterized by the rib depth of a longitudinal direction central field being shallower than the depth of the crevice of said reduced pressure variant part at least, and carrying out said rib.

[0020]

[Function] If it is in invention of the 1st of said configuration, since it is in the condition that the narrow wall was reinforced with the rib hollowed over said narrow wall and the chamfer of the neighbors at the time of heating restoration of contents, even if heat deformation etc. joins the pressure and pan which are added from the weight and the wall which deformed of contents, the bulge deformation by the side of the narrow wall lower part will be prevented.

[0021] When the pressure beyond a fixed reduced pressure value is added in a narrow wall by making the rib depth of the longitudinal direction central field of a rib especially shallower than the rib depth of both ends, it becomes possible to absorb the pressure according to deformation of a rib.

[0022] Therefore, deformation by the reduced pressure deformation force of a wall is stopped in a reduced pressure variant part, and commodity value is spoiled.

[0023] If it is in the 2nd invention, when the rib of the both-ends field which compares with the rib of a central field and is deep is extended by the narrow wall from a chamfer The both-sides section of a narrow wall will be reinforced, and the rib of this both-ends field can prevent certainly the pressure added from the weight and the wall which deformed of contents, and that the narrow whole wall carries out bulge deformation, even if heat deformation etc. is added further.

[0024] Moreover, reduced pressure deformation only of the rib part in a narrow wall can be carried out, without making a chamfer produce deformation, even if it is the case where the reduced pressure

deformation force joins a reduced pressure variant part exceeding a fixed reduced pressure value at the time of reduction reduced pressure of contents.

[0025] Therefore, he stops deformation by the internal pressure and reduced pressure of a wall in a narrow wall, and is trying not to spoil commodity value.

[0026] If it is in the 3rd invention, even if heat deformation etc. is added further, it can prevent certainly the pressure added from the weight and the wall which deformed of contents, and that the narrow whole wall carries out bulge deformation like invention of the 1st invention with the rib hollowed over the narrow wall and the chamfer of the neighbors.

[0027] Moreover, since the rib depth of a longitudinal direction center-section field is made shallower than the depth of the crevice of a reduced pressure variant part even if it is the case where the reduced pressure deformation force joins a reduced pressure variant part exceeding a fixed reduced pressure value at the time of reduction reduced pressure of contents, the rib of a central field can deform and reduced pressure can be absorbed.

[0028]

[Example] Hereafter, the suitable example of this invention is explained to a detail with reference to a drawing.

[0029] Drawing 1 - drawing 3 are the sectional views of the biaxial-stretching-blow-molding container (henceforth a bottle) concerning one example of this invention.

[0030] As for the bottle 10 shown in this example, the drum section 20 formed between the heel section 18 which stands in a row in the upper part by biaxial stretching blow molding from the lip section 12 containing opening by the side of upper limit, the shoulder 14 which stands in a row caudad from this lip section 12, the pars basilaris ossis occipitalis 16 by the side of a lower limit, and this pars basilaris ossis occipitalis 16, and this heel section 18 and shoulder 14 was being fabricated by one using polyethylene terephthalate (PET).

[0031] The drum section 20 is formed in the cross-section abbreviation square shape which has the broad wall 22 and the broad narrow wall 24 of the pair arranged in the opposite location, respectively. The chamfer 26 is formed in the wall 22 of each ****, and the intersection of wall 24 narrow comrades at this drum section 20 covering the height direction. Rather than the narrow wall 24, this chamfer 26 is formed in narrow and reinforces the intersection of the broad wall 22 and the narrow wall 24. Namely, since a chamfer 26 is arranged at each intersection of the wall 22 with a broad drum section 20, and the narrow wall 24 and the chamfer 26 moreover serves as narrow from the narrow wall 24, it is in the condition that four intersections of each walls 22 and 24 were reinforced by the chamfer 26 with reinforcement higher than each walls 22 and 24.

[0032] Moreover, the slot 28 which becomes depressed in the inner direction is formed in an upper part location rather than the height direction mid gear of a drum section 20. This slot 28 is formed over the broad wall 22, the narrow wall 24, and a chamfer 26 succeeding a hoop direction, and a drum section 20 is classified into the upper drum section 30 and the bottom drum section 32 bordering on this slot 28. Thus, while performing reinforcement to the lateral pressure of a drum section 20 in a location in the middle of the vertical direction of a drum section 20 by forming a slot 28 in a location middle [in the drum section 20 vertical direction], the buckling distortion of a drum section 20 is prevented by classifying a drum section 20 into a subunit in the vertical direction of the upper drum section 30 and the bottom drum section 32.

[0033] furthermore, the wall 22 broad to the bottom drum section 32 which receives greatly the fluid pressure from the contents with which it filled up -- the time of reduction reduced pressure of contents -- reduced pressure -- while forming the deformable reduced pressure variant part 34, the rib 36 which prevents the swelling to the outside at the time of heating restoration of contents and broad wall 22 grasping is formed in the narrow wall 24.

[0034] The reduced pressure variant part 34 is formed in the shape of [longwise into a bottom drum section of broad wall 22 32 central part] an abbreviation rectangle. The outside surface excluding the reduced pressure variant part 34 of said wall 22 to a perimeter in this reduced pressure variant part 34 It is formed after the crevice 38 which becomes depressed toward the inner direction from (the general surface is called hereafter) has continued annularly, and it is formed after the flat-surface section 40 located in the method twist of the inside of some rather than the general surface of said wall 22 has followed the central part surrounded by this crevice 38 from a crevice 38. And the flat-surface section 40 can carry out reduced pressure deformation now in the inner direction by using a part for the periphery edge of a crevice 38 as hinged support at the time of reduction reduced pressure of contents.

[0035] Moreover, the reinforcement slot 42 covering a longitudinal direction is formed in the up location in

the reduced pressure variant part 34. He is trying to prevent that the general surface of the wall 22 which is formed in the condition of having become depressed towards the method of inside more deeply than the crevice 38 formed in the perimeter of the reduced pressure variant part 34, functions as a reinforcing rib, reinforces the reduced pressure variant-part 34 upper part, and stands in a row in the upper part of the reduced pressure variant part 34 deforms this reinforcement slot 42 in connection with reduced pressure deformation of the reduced pressure variant part 34. Moreover, the reinforcement slot 42 is formed in the reduced pressure variant part 34 in the condition of having installed to the location in the middle of the wall 22 which stands in a row on it from the crevice 38 upper-limit location of the reduced pressure variant part 34, and he is trying for spacing of the wall surface between this reinforcement slot 42 and slot 28 to become narrow. Therefore, it will be in the condition that the reinforcing rib was formed between the reinforcement slot 42 and the slot 28, the rib effectiveness becomes high, and it becomes possible to prevent certainly about the general surface of the wall 22 which stands in a row in the upper part of the reduced pressure variant part 34 deforming further in connection with reduced pressure deformation of the reduced pressure variant part 34. Furthermore, the reinforcement step 45 is formed in the standup section 43 between the pars basilaris ossis occipitalis of the reinforcement slot 42, and the general surface of the upper part location of the reduced pressure variant part 34, and he reinforces the standup section 43, and is trying for crevice 38 upper limit to serve as hinged support certainly.

[0036] The rib 36 is formed covering the height direction of the narrow wall 24 throughout two or more (it sets to this example and is five), and the cross direction at intervals of predetermined, and he is trying to prevent bulge of the wall 24 at the time of heating restoration of contents, and grasping of the broad wall 22 by reinforcing the narrow wall 24 with this rib 36.

[0037] Moreover, the extension 44 extended over the neighboring chamfers 26 exceeding the corner which a narrow wall 24 and a narrow chamfer 26 intersect is formed in the both ends of each rib 36. Thus, by making a rib 36 extend to the neighboring chamfers 26, the chamfer 26 with high flexural strength can be made to support a part for the both ends of a rib 36 by narrow rather than the narrow wall 24, and bulge of a wall 24 can be further prevented now certainly.

[0038] Furthermore, the depth D2 of the rib 36 of the longitudinal direction central field in the narrow wall 24 each rib 36 It is formed more shallowly than the depth D1 of the extension 44 formed in the both-ends field. When the reduced pressure deformation force beyond a fixed reduced pressure value joins the reduced pressure variant part 34, rib 36 part in the narrow wall 24 with the depth shallower than an extension 44 enables it to carry out reduced pressure deformation. He is trying to prevent reduced pressure deformation of the general surface of the wall 22 which stands in a row in the upper part of the reduced pressure variant part 34 established in the broad wall 22.

[0039] Moreover, the depth D2 of rib 36 part in the narrow wall 24 It is formed more shallowly than the depth D3 of the crevice 38 in the reduced pressure variant part 34 prepared in the broad wall 22. When the reduced pressure deformation force beyond a fixed reduced pressure value joins the reduced pressure variant part 34, rib 36 part in the narrow wall 24 with the depth shallower than a crevice 38 enables it to carry out reduced pressure deformation easily. He is trying to prevent reduced pressure deformation of the general surface of the wall 22 which stands in a row in the upper part of the reduced pressure variant part 34 established in the broad wall 22.

[0040] Furthermore, the reduced pressure variant parts 46 and 48 which can carry out reduced pressure deformation at the time of reduction reduced pressure of contents, respectively are formed in the broad wall 22 and the broad narrow wall 24 of the upper drum section 30. In the broad wall 22, the reduced pressure variant part 46 is formed greatly, and the reduced pressure variant part 48 is formed comparatively small in the narrow wall 24. Moreover, in the upper drum section 30, since area is small and the reinforcement of the broad wall 22 and the narrow wall 24 is also high compared with the bottom drum section 32, the reduced pressure variant parts 46 and 48 consist of only crevices 50 and 52 and the flat-surface sections 54 and 56, a reinforcement slot is not prepared and the rib is not prepared in the narrow wall 24.

[0041] It is prevented that it will be in a bulge condition since the narrow wall 24 of the bottom drum section 32 is reinforced with the rib 36 even if fluid pressure starts a drum section 20 and it is a drum section 20 and the case where the pressure of the bulge direction is applied especially to the bottom drum section 32 in case heating restoration of the contents is carried out, since this examples are the above configurations. Since it is in the condition that both ends were extended to the chamfer 26 with high reinforcement, and especially the rib 36 was supported, bulge of a wall 24 will be prevented certainly.

[0042] Moreover, even if it is the case where grasped the broad wall 22 of a drum section 20, and internal pressure becomes high, bulge of the narrow wall 24 will be certainly prevented by existence of said rib 36.

[0043] Furthermore, even if it is the case where the contents by which heating restoration was carried out carry out reduction reduced pressure, the reduced pressure variant part 34 prepared in the reduced pressure variant parts 46 and 48 of the upper drum section 30 and the broad wall 22 of the bottom drum section 32 will carry out reduced pressure deformation, and will correspond to reduction reduced pressure of contents.

[0044] In this case, it follows on reduced pressure deformation of the reduced pressure variant part 34 in the bottom drum section 32 at the time of reduced pressure. The general surface of the wall 22 connected with the upper part of the reduced pressure variant part 34 deformation a lifting and a cone The depth D2 of the rib 36 in the narrow wall 24 is formed more shallowly than the depth D1 of the extension 44 formed in both ends. And since the depth D2 of rib 36 part in the narrow wall 24 is formed more shallowly than the depth D3 of the crevice 38 in the reduced pressure variant part 34 prepared in the broad wall 22, When the reduced pressure deformation force beyond a fixed reduced pressure value joins the reduced pressure variant part 34, rib 36 part in the narrow wall 24 will carry out reduced pressure deformation certainly, and reduced pressure deformation of the general surface of the wall 22 which stands in a row in the upper part of the reduced pressure variant part 34 established in the broad wall 22 will be prevented.

[0045] Moreover, deformation of said general surface will be more certainly prevented by reinforcement of the reinforcement slot 42 established in the upper part in the reduced pressure variant part 34. In order to narrow spacing of the general surface of the wall 22 between the slots 28 and the reinforcement slots 34 which were formed in the drum section 20 by being hollowed by the method of inside more deeply than the crevice 38 which the reinforcement slot 42 formed in the reduced pressure variant part 34 especially, and being installed in the reduced pressure variant-part 34 upper part like the above-mentioned and to function as a reinforcing rib, deformation of the general surface will be prevented more certainly.

[0046] This invention is not limited to said each example, and various deformation implementation is possible for it within the limits of the summary of this invention.

[0047] For example, in said example, although the rib is not formed in an upper drum section, it is possible to form a rib in parts, such as a chamfer which a label etc. is stuck in an upper drum section in many cases, and does not have effect in pasting of this label etc.

[0048] Moreover, set to this example and the depth D2 of the rib 36 in the narrow wall 24 is formed more shallowly than the depth D1 of the extension 44 formed in both ends. And although the depth D2 of rib 36 part in the narrow wall 24 is formed more shallowly than the depth D3 of the crevice 38 in the reduced pressure variant part 34 prepared in the broad wall 22 Relation of this depth can also be considered only as one relation of the relation between the rib part in a narrow wall, and a crevice or an extension.

[0049] Furthermore, it is possible to also make an extension 44 extend with the depth of rib 36 part in the narrow wall 24.

[0050]

[Effect of the Invention] If it is in the 1st invention as explained above, since it is in the condition that the narrow wall was reinforced with the rib hollowed over said narrow wall and the chamfer of the neighbors at the time of heating restoration of contents, even if heat deformation etc. is added further, the bulge deformation by the side of the narrow wall lower part has the pressure added from the weight and the wall which deformed of contents, and the effectiveness are prevented.

[0051] When the pressure beyond a fixed reduced pressure value is added in a narrow wall by making the rib depth of the longitudinal direction central field of a rib especially shallower than the rib depth of both ends, it becomes possible to absorb the pressure according to deformation of a rib.

[0052] Therefore, deformation by the reduced pressure deformation force of a wall is stopped in a reduced pressure variant part, and it is effective in carrying out as [spoil / commodity value].

[0053] When the rib of the both-ends field which compares with the rib of a central field and is deep is extended by the narrow wall from a chamfer according to the 2nd invention The rib of this both-ends field will reinforce the both-sides section of a narrow wall, and there are a pressure added from the weight and the wall which deformed of contents, and effectiveness that it can prevent certainly that the narrow whole wall carries out bulge deformation even if heat deformation etc. is added further.

[0054] Moreover, it is effective in the ability to carry out reduced pressure deformation only of the rib part in a narrow wall, without making a chamfer produce deformation, even if it is the case where the reduced pressure deformation force joins a reduced pressure variant part exceeding a fixed reduced pressure value at the time of reduction reduced pressure of contents.

[0055] Therefore, deformation by the internal pressure and reduced pressure of a wall is stopped in a narrow wall, and it is effective in carrying out as [spoil / commodity value].

[0056] According to the 3rd invention, there are a pressure added from the weight and the wall which

deformed of contents with the rib hollowed over the narrow wall and the chamfer of the neighbors, and effectiveness that it can prevent certainly that the narrow whole wall carries out bulge deformation even if heat deformation etc. is added further, like invention of the 1st invention.

[0057] Moreover, since the rib depth of a longitudinal direction center-section field is made shallower than the depth of the crevice of a reduced pressure variant part even if it is the case where the reduced pressure deformation force joins a reduced pressure variant part exceeding a fixed reduced pressure value at the time of reduction reduced pressure of contents, it is effective in the ability for the rib of a central field to deform and absorb reduced pressure.

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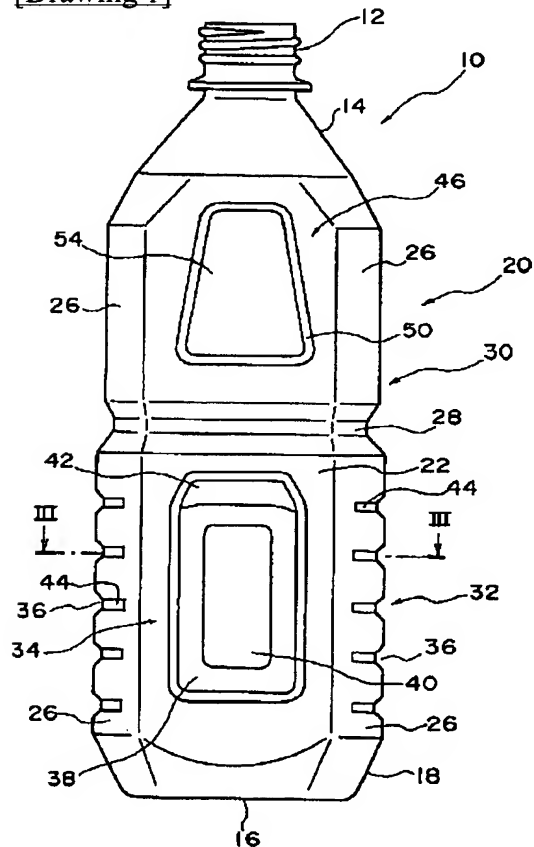
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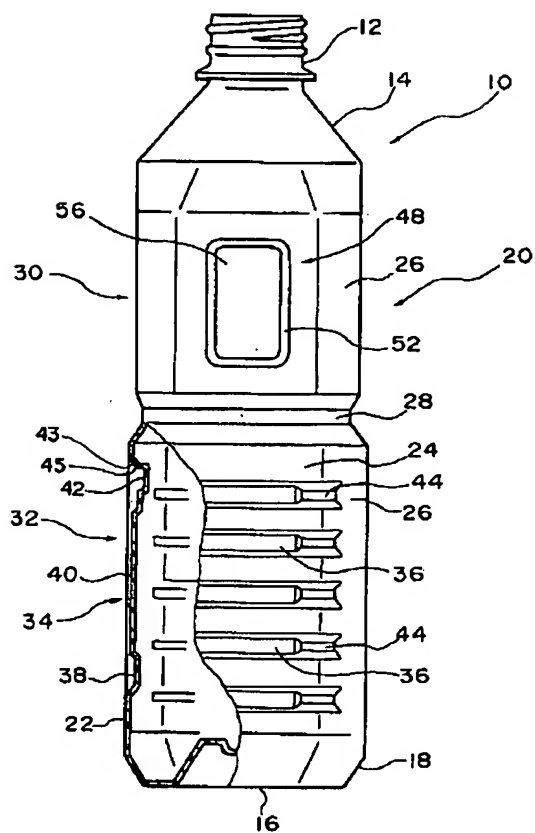
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DRAWINGS

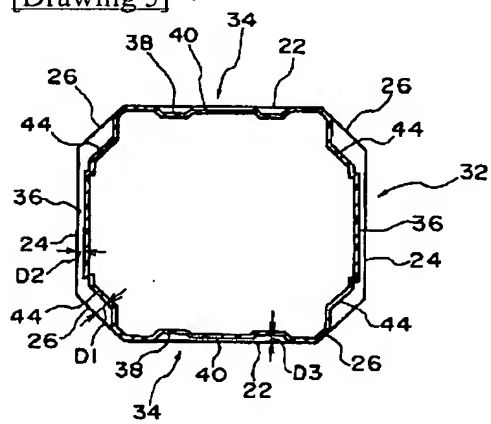
[Drawing 1]



[Drawing 2]



[Drawing 3]



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CORRECTION OR AMENDMENT

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 [Filing Date] June 6, Heisei 13 (2001. 6.6)
 [Procedure amendment 1]
 [Document to be Amended] Specification
 [Item(s) to be Amended] Claim
 [Method of Amendment] Modification
 [Proposed Amendment]
 [Claim(s)]

[Claim 1] In the biaxial-stretching-blow-molding container which prepared the reduced pressure variant part at the time of reduction reduced pressure in said broad height direction abbreviation mid-gear bottom of a wall among the walls which have a chamfer in the intersection of a broad wall and a narrow wall, and were fabricated by the cross-section abbreviation rectangle,
 It has the rib hollowed over said narrow wall and the chamfer of the neighbors,
 The biaxial-stretching-blow-molding container characterized by making the rib depth of the longitudinal direction central field of said rib shallower than the rib depth of the both-ends field.

[Claim 2] In claim 1,
 The rib of said both-ends field is a biaxial-stretching-blow-molding container characterized by being extended by the narrow wall from the chamfer.

[Claim 3] In the biaxial-stretching-blow-molding container which prepared the reduced pressure variant part which has a chamfer in the intersection of a broad wall and a narrow wall, and has the crevice which carries out reduced pressure deformation at the time of reduction reduced pressure among the walls fabricated by the cross-section abbreviation rectangle to said broad height direction abbreviation mid-gear down side of a

wall,

It has the rib hollowed over said narrow wall and the chamfer of the neighbors,
The biaxial-stretching-blow-molding container characterized by the rib depth of a longitudinal direction central field being shallower than the depth of the crevice of said reduced pressure variant part at least, and carrying out said rib.

[Procedure amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0017

[Method of Amendment] Modification

[Proposed Amendment]

[0017]

[Means for Solving the Problem] In order to attain said purpose, the 1st invention has a chamfer in the intersection of a broad wall and a narrow wall. In the biaxial-stretching-blow-molding container which prepared the reduced pressure variant part at the time of reduction reduced pressure in said broad height direction abbreviation mid-gear bottom of a wall among the walls fabricated by the cross-section abbreviation rectangle It has the rib hollowed over said narrow wall and the chamfer of the neighbors, and is characterized by making the rib depth of the longitudinal direction central field of said rib shallower than the rib depth of the both-ends field.

[Procedure amendment 3]

[Document to be Amended] Specification

[Item(s) to be Amended] 0019

[Method of Amendment] Modification

[Proposed Amendment]

[0019] The 3rd invention has a chamfer in the intersection of a broad wall and a narrow wall. In the biaxial-stretching-blow-molding container which prepared the reduced pressure variant part which has the crevice which carries out reduced pressure deformation at the time of reduction reduced pressure in said broad height direction abbreviation mid-gear bottom of a wall among the walls fabricated by the cross-section abbreviation rectangle It has the rib hollowed over said narrow wall and the chamfer of the neighbors, and is characterized by the rib depth of a longitudinal direction central field being shallower than the depth of the crevice of said reduced pressure variant part at least, and carrying out said rib.

[Procedure amendment 4]

[Document to be Amended] Specification

[Item(s) to be Amended] 0031

[Method of Amendment] Modification

[Proposed Amendment]

[0031] The drum section 20 is formed in the cross-section abbreviation rectangle which has the broad wall 22 and the broad narrow wall 24 of the pair arranged in the opposite location, respectively. The chamfer 26 is formed in the wall 22 of each ***, and the intersection of wall 24 narrow comrades at this drum section 20 covering the height direction. Rather than the narrow wall 24, this chamfer 26 is formed in narrow and reinforces the intersection of the broad wall 22 and the narrow wall 24. Namely, since a chamfer 26 is arranged at each intersection of the wall 22 with a broad drum section 20, and the narrow wall 24 and the chamfer 26 moreover serves as narrow from the narrow wall 24, it is in the condition that four intersections of each walls 22 and 24 were reinforced by the chamfer 26 with reinforcement higher than each walls 22 and 24.

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(71) 出願人 000227032

日精エー・エス・ビー機械株式会社

長野県小諸市甲4586番地 3

(72) 発明者 小林 英幸

長野県小諸市甲4586番地 3 日精エー・エ

ス・ビー機械株式会社内

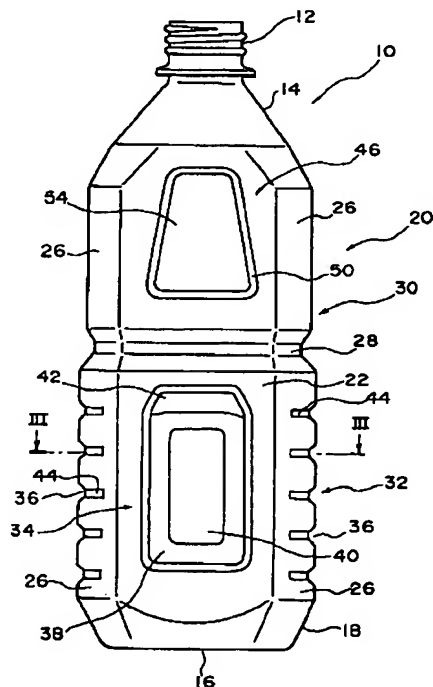
(74) 代理人 弁理士 井上 一 (外 2 名)

(54) 【発明の名称】 二軸延伸ブロー成形容器

(57) 【要約】

【目的】 内容物の加熱充填時などに壁面が膨出するのを防止すると共に、減容減圧時に減圧パネル以外の壁面が凹んで形状変形するのを防止することのできる二軸延伸ブロー成形容器を提供する。

【構成】 幅広の壁部 2 2 及び幅狭の壁部 2 4 の交差部に面取り部 2 6 を有し、横断面角形に形成された壁部のうち、幅広の壁部 2 2 の高さ方向略中央位置下側に減圧変形部 3 4 が設けられている。幅狭の壁部 2 4 及びその両隣の面取り部 2 6 にわたってリブ 3 6 が窪ませて設けられている。このリブ 3 6 の長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされている。これにより、一定の減圧値を越える減圧変形力が減圧変形部 3 4 に加わった場合に、幅狭の壁部 2 4 内のリブ 3 6 部分を減圧変形させることで、幅広の壁部 2 2 の外表面の変形を防止する。



【特許請求の範囲】

【請求項 1】 幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略角形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時の減圧変形部を設けた二軸延伸ブロー成形容器において、

前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブを有し、

前記リブの長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされていることを特徴とする二軸延伸ブロー成形容器。

【請求項 2】 請求項 1 において、

前記両端領域のリブは、面取り部から幅狭の壁部に延長されていることを特徴とする二軸延伸ブロー成形容器。

【請求項 3】 幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略角形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時に減圧変形する凹部を有する減圧変形部を設けた二軸延伸ブロー成形容器において、

前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブを有し、

前記リブの少なくとも長手方向中央領域のリブ深さが、前記減圧変形部の凹部の深さよりも浅くされていることを特徴とする二軸延伸ブロー成形容器。

【発明の詳細な説明】

【0001】

【産業上の利用分野】本発明は、二軸延伸ブロー成形容器に関し、特に、二軸延伸ブロー成形容器の壁面構造に関する。

【0002】

【従来の技術】周知のように、例えば、ポリエチレンテレフタレート（PET）を用いて二軸延伸ブロー成形された容器（以下、ボトルという）は、耐ガスバリア性、透明度、強靱性、衛生面等に多くの利点を有する。

【0003】ところで、二軸延伸ブロー成形によって得られたボトルの一つに、耐熱瓶と称されるものがある。この耐熱瓶は、殺菌のために高温にされたジュース等の内容物を充填することができるボトルである。

【0004】しかしながら、このようなボトルでは、高温充填された内容物が冷めると内容物の減容により内部が減圧雰囲気となり、ボトル壁部が減圧変形することがある。このような減容減圧による変形はボトル全体の外観形状の変化を招き、ボトルの商品価値を損うことになる。

【0005】そこで、このような減容減圧が起きた場合の対策として、壁部の一部のみを減容減圧による変形を行なわせて、ボトル全体の外観形状の変形を防止する構造が採用されている。

【0006】この構造は、減圧パネルと称されるものであって、ボトルの壁部表面にボトル内方に向け窪んだ凹

部を複数設けた構造が通常用いられている。これにより、減容減圧が発生した場合に凹部のみを減圧変形させることでボトルの他の部分での形状変化を防止することができる。

【0007】一方、上記二軸延伸ブロー成形によって得られるボトルには、デザイン上、一例として長方形の断面形状を有するものがある。なお、この場合の断面は、ボトルの縦方向と直角な方向の断面をいう。

【0008】そして、このような長方形断面のボトルに対しても減圧パネルを設けることが行なわれており、正方形断面の場合には 4 辺全ての壁面に、また長方形断面の場合には撓み変形しやすい長辺の壁面にそれぞれ減圧パネルが形成されている。

【0009】この減圧パネルは、一般にボトルの壁部における上下 2 カ所に形成されるようになっている。

【0010】また、この種のボトルには、各辺が交差する位置に面取り部が形成されて各辺を連続させたものもある。この面取り部を形成する理由としては、ボトル角部、つまり、壁面をなす各辺の交差する位置の強度を確保することが理由となっている。したがって、このようなボトルの断面形状は八角形とされている。

【0011】

【発明が解決しようとする課題】しかしながら、上記した容器のうち、正方形断面の場合には、ほとんど減容減圧時の減圧変形が各辺の壁面で略均等に行われるので外観形状の変化が少ないが、特に、長方形断面のように辺の長さが違うボトルの場合には、短い辺の壁面が膨出して外観形状が変化してしまうことがある。

【0012】すなわち、高温内容物充填時には、液圧と壁部の熱変形によって膨出変形し易く、その後の冷却時には、減圧によって壁部はボトル内方へへこみ変形し易い。この場合、幅広壁部の方がへこみ易いので減圧変形部が変形するが、幅狭壁部はなかなかへこみ変形しにくい。したがって、膨出変形してしまうとそのままの状態が保たれてしまうことになる。

【0013】そこで、幅狭壁部に横リブを形成したら熱充填時の膨出変形は防止された。しかし、この幅狭壁部では全く減圧変形は見込めないため、他の壁部、とりわけ下方に形成された幅広壁部の役割は大きくなる。

【0014】ところで、熱充填温度が予定よりも高く設定された場合や、運搬中の衝撃等による外力、あるいは、消費者による把持時の圧力による変形が、この負担の多い幅広壁部にかかった場合、幅広壁部の減圧変形部以外の面が変形し、自己復帰できなくなることがあるという問題があった。

【0015】このような減圧パネル間に位置する壁面の減容減圧時における変形は、特に下側の減圧パネルの上部付近にみられることが多いものであった。

【0016】本発明は、前述の問題点に着目してなされたもので、その目的は、内容物の加熱充填時などに壁面

が膨出するのを防止すると共に、減容減圧時に減圧パネル以外の壁面が凹んで形状変形するのを防止することのできる二軸延伸ブロー成形容器を提供することにある。

【0017】

【課題を解決するための手段】前記目的を達成するため、第1の発明は、幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略角形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時の減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわた

って窪ませたリブを有し、前記リブの長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされていることを特徴としている。

【0018】第2の発明は、第1の発明において、前記両端領域のリブは、面取り部から幅狭の壁部に延長されていることを特徴としている。

【0019】第3の発明は、幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略角形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時に減圧変形する凹部を有する減圧変形部

を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブを有し、前記リブの少なくとも長手方向中央領域のリブ深さが、前記減圧変形部の凹部の深さよりも浅くされていることを特徴としている。

【0020】

【作用】前記構成の第1の発明にあつては、内容物の加熱充填時に、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブによって幅狭の壁部が補強された状態となっているため、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部下部側の膨出変形は防止されることとなる。

【0021】特に、リブの長手方向中央領域のリブ深さが両端部のリブ深さよりも浅くされることによって、幅狭の壁部において、一定の減圧値以上の圧力が加わった場合に、その圧力をリブの変形により吸収することが可能となる。

【0022】したがって、壁部の減圧変形力による変形を、減圧変形部内に止めて、商品価値を損わないようになっている。

【0023】第2の発明にあつては、中央領域のリブに比し深くなっている両端領域のリブが面取り部から幅狭の壁部に延長されることにより、この両端領域のリブが幅狭の壁部の両側部を補強することとなり、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部全体が膨出変形するのを確実に防止することができる。

【0024】また、内容物の減容減圧時に、一定の減圧値を越えて減圧変形部に減圧変形力が加わった場合であつても、面取り部に変形を生じさせることなく、幅狭の

壁部内のリブ部分のみを減圧変形させることができる。

【0025】したがって、壁部の内圧や減圧による変形を、幅狭の壁部内に止めて、商品価値を損わないようにしている。

【0026】第3の発明にあつては、第1の発明の発明と同様に、幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブによって、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部全体が膨出変形するのを確実に防止できる。

【0027】また、内容物の減容減圧時に、一定の減圧値を越えて減圧変形部に減圧変形力が加わった場合であっても、長手方向中央部領域のリブ深さが減圧変形部の凹部の深さよりも浅くされているため、中央領域のリブが変形して減圧を吸収することができる。

【0028】

【実施例】以下、本発明の好適な実施例について、図面を参照して詳細に説明する。

【0029】図1～図3は、本発明の一実施例に係る二軸延伸ブロー成形容器（以下、ボトルという）の断面図である。

【0030】この実施例に示されているボトル10は、たとえばポリエチレンテレフタレート（PET）を用いて、二軸延伸ブロー成形により、上端側の開口部を含むリップ部12と、このリップ部12から下方に連なる肩部14と、下端側の底部16と、この底部16から上方に連なるヒール部18と、このヒール部18と肩部14との間に形成された胴部20とが一体に成形されたものとなっている。

【0031】胴部20は、それぞれ対向位置に配置された一對の幅広の壁部22および幅狭の壁部24を有する横断面略角形に形成されている。この胴部20には、各幅広の壁部22および幅狭の壁部24同士の交差部に面取り部26が高さ方向にわたって形成されている。この面取り部26は、幅狭の壁部24よりも幅狭に形成され、幅広の壁部22および幅狭の壁部24の交差部の補強をなすようになっている。すなわち、胴部20は、幅広の壁部22および幅狭の壁部24の各交差部に面取り部26が配置され、しかも面取り部26が幅狭の壁部24よりも幅狭となっているため、各壁部22、24の交差部4カ所が各壁部22、24よりも強度の高い面取り部26によって補強された状態となっている。

【0032】また、胴部20の高さ方向中央位置よりも上方位置に、内方に窪む溝部28が形成されるようになっている。この溝部28は、幅広の壁部22、幅狭の壁部24および面取り部26にわたり周方向に連続して設けられるようになっており、この溝部28を境に、胴部20が上胴部30と、下胴部32とに区分けされるようになっている。このように、溝部28が、胴部20上下方向における途中位置に形成されることにより、胴部2

0の上下方向途中位置で胴部20の側圧に対する補強を行うと共に、胴部20を上胴部30および下胴部32の上下方向において小単位に区分けすることにより、胴部20の座屈変形を防止するようになっている。

【0033】さらに、充填された内容物からの液圧を大きく受ける下胴部32には、幅広の壁部22に内容物の減容減圧時に減圧変形可能な減圧変形部34を設けると共に、幅狭の壁部24に内容物の加熱充填時や幅広の壁部22把持時の外側への膨らみを防止するリブ36が設けられるようになっている。

【0034】減圧変形部34は、幅広の壁部22の下胴部32中央部分に縦長の略長方形形状に形成されており、この減圧変形部34内には周囲に前記壁部22の減圧変形部34を除く外表面（以下、一般面と称す）よりも内方に向かって窪む凹部38が環状に連続した状態で形成され、この凹部38に囲まれる中央部分に前記壁部22の一般面よりも若干内方より位置する平面部40が凹部38から連続した状態で形成されている。そして、内容物の減容減圧時に、凹部38の外周縁部分をヒンジ支点として平面部40が内方に減圧変形し得るようになっている。

【0035】また、減圧変形部34内の上部位置には、横方向にわたる補強溝42が形成されている。この補強溝42は、減圧変形部34の周囲に形成した凹部38よりも深く内方に向けて窪んだ状態で形成され、補強リブとして機能するもので、減圧変形部34上部の補強を行い、減圧変形部34の上部に連なる壁部22の一般面が減圧変形部34の減圧変形に伴って変形するのを防止するようにしている。また、補強溝42は、減圧変形部34内において、減圧変形部34の凹部38上端位置からその上に連なる壁部22の途中位置まで延設した状態で設けられており、この補強溝42と溝部28との間の壁面の間隔が狭くなるようにしている。したがって、補強溝42と溝部28との間に補強リブが形成された状態となつて、リブ効果が高くなり、より一層、減圧変形部34の上部に連なる壁部22の一般面が減圧変形部34の減圧変形に伴って変形するのを確実に防止することが可能となる。さらに、補強溝42の底部と減圧変形部34の上方位置の一般面との間の立上り部43に、補強段部45を設け、立上り部43の補強を行い、凹部38上端が確実にヒンジ支点となるようにしている。

【0036】リブ36は、幅狭の壁部24の高さ方向に所定間隔で複数本（本実施例においては5本）、幅方向全域にわたって設けられており、このリブ36によって、幅狭の壁部24の補強を行うことにより、内容物の加熱充填時や幅広の壁部22の把持時における壁部24の膨出を防止するようになっている。

【0037】また、各リブ36の両端部には、幅狭の壁部24と面取り部26とが交差する角部を越えて両隣の面取り部26にわたって延長された延長部44が設けら

れており、このようにリブ36を両隣の面取り部26まで延長させることにより、リブ36の両端部分を、幅狭の壁部24よりも幅狭で曲げ強度の高い面取り部26に支持させることができ、より一層、壁部24の膨出を確実に防止できるようになっている。

【0038】さらに、各リブ36は幅狭の壁部24内にある長手方向中央領域のリブ36の深さD2が、その両端領域に形成された延長部44の深さD1よりも浅く形成され、減圧変形部34に一定の減圧値以上の減圧変形力が加わった場合に、延長部44よりも深さの浅い幅狭の壁部24におけるリブ36部分が減圧変形し得るようにして、幅広の壁部22に設けた減圧変形部34の上部に連なる壁部22の一般面の減圧変形を防止するようにしている。

【0039】また、幅狭の壁部24におけるリブ36部分の深さD2は、幅広の壁部22に設けた減圧変形部34内の凹部38の深さD3よりも浅く形成され、減圧変形部34に一定の減圧値以上の減圧変形力が加わった場合に、凹部38よりも深さの浅い幅狭の壁部24におけるリブ36部分が容易に減圧変形し得るようにして、幅広の壁部22に設けた減圧変形部34の上部に連なる壁部22の一般面の減圧変形を防止するようにしている。

【0040】さらに、上胴部30の幅広の壁部22および幅狭の壁部24には、それぞれ内容物の減容減圧時に減圧変形し得る減圧変形部46、48が設けられている。幅広の壁部22においては減圧変形部46は大きく形成され、幅狭の壁部24においては減圧変形部48は比較的小さく形成されるようになっている。また、上胴部30においては、下胴部32に比べて面積が小さく、幅広の壁部22および幅狭の壁部24の強度も高いので、減圧変形部46、48は凹部50、52および平面部54、56のみで構成され、補強溝は設けられておらず、しかも、幅狭の壁部24にはリブが設けられていない。

【0041】本実施例は以上のような構成であるから、内容物を加熱充填する際に、胴部20に液圧がかかって、胴部20、特に下胴部32に膨出方向の圧力がかかった場合であっても、リブ36によって下胴部32の幅狭の壁部24が補強されているため、膨出状態となるのは防止される。特に、リブ36は、両端部が強度の高い面取り部26まで延長されて支持された状態となっているため、壁部24の膨出は確実に防止されることとなる。

【0042】また、胴部20の幅広の壁部22を把持して内圧が高くなった場合であっても、前記リブ36の存在により、幅狭の壁部24の膨出が確実に防止されることとなる。

【0043】さらに、加熱充填された内容物が減容減圧した場合であっても、上胴部30の減圧変形部46、48および下胴部32の幅広の壁部22に設けた減圧変形

部 3 4 が減圧変形して内容物の減容減圧に対応することとなる。

【0044】この場合、減圧時の下胴部 3 2 における減圧変形部 3 4 の減圧変形に伴って、減圧変形部 3 4 の上部と連なる壁部 2 2 の一般面が変形を起こしやすいが、幅狭の壁部 2 4 内におけるリブ 3 6 の深さ D 2 が両端部に形成された延長部 4 4 の深さ D 1 よりも浅く形成され、しかも、幅狭の壁部 2 4 におけるリブ 3 6 部分の深さ D 2 が、幅広の壁部 2 2 に設けた減圧変形部 3 4 内の凹部 3 8 の深さ D 3 よりも浅く形成されているため、減圧変形部 3 4 に一定の減圧値以上の減圧変形力が加わった場合に、幅狭の壁部 2 4 におけるリブ 3 6 部分が確実に減圧変形して、幅広の壁部 2 2 に設けた減圧変形部 3 4 の上部に連なる壁部 2 2 の一般面の減圧変形を防止することとなる。

【0045】また、減圧変形部 3 4 内上部に設けた補強溝 4 2 の補強によって前記一般面の変形がより確実に防止されることとなる。特に、補強溝 4 2 が減圧変形部 3 4 に形成した凹部 3 8 よりも深く内方に窪ませられ、かつ、前述の如く減圧変形部 3 4 上方に延設されることにより、胴部 2 0 に形成した溝部 2 8 と補強溝 3 4 との間の壁部 2 2 の一般面の間隔が狭められて、補強リブとして機能するため、より確実に一般面の変形が防止されることとなる。

【0046】本発明は、前記各実施例に限定されるものではなく、本発明の要旨の範囲内において種々の変形実施が可能である。

【0047】例えば、前記実施例においては、上胴部にリブを形成していないが、上胴部においてはラベル等が貼付されることが多く、このラベル等の貼付に影響のない面取り部等の部分にリブを形成することは可能である。

【0048】また、本実施例においては、幅狭の壁部 2 4 内におけるリブ 3 6 の深さ D 2 が両端部に形成された延長部 4 4 の深さ D 1 よりも浅く形成され、しかも、幅狭の壁部 2 4 内におけるリブ 3 6 部分の深さ D 2 が、幅広の壁部 2 2 に設けた減圧変形部 3 4 内の凹部 3 8 の深さ D 3 よりも浅く形成されているが、この深さの関係は、幅狭の壁部内におけるリブ部分と、凹部または延長部との関係のいずれかの関係のみとすることも可能である。

【0049】さらに、幅狭の壁部 2 4 内におけるリブ 3 6 部分の深さのまま延長部 4 4 を延長させることも可能である。

【0050】

【発明の効果】以上説明したように第 1 の発明にあっては、内容物の加熱充填時に、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブによって幅狭の壁部が補強された状態となっているため、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わ

ったとしても、幅狭の壁部下部側の膨出変形は防止されるという効果がある。

【0051】特に、リブの長手方向中央領域のリブ深さが両端部のリブ深さよりも浅くされることによって、幅狭の壁部において、一定の減圧値以上の圧力が加わった場合に、その圧力をリブの変形により吸収することが可能となる。

【0052】したがって、壁部の減圧変形力による変形を、減圧変形部内に止めて、商品価値を損わないようにするという効果がある。

【0053】第 2 の発明によれば、中央領域のリブに比し深くなっている両端領域のリブが面取り部から幅狭の壁部に延長されることにより、この両端領域のリブが幅狭の壁部の両側部を補強することとなり、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部全体が膨出変形するのを確実に防止することができるという効果がある。

【0054】また、内容物の減容減圧時に、一定の減圧値を越えて減圧変形部に減圧変形力が加わった場合であっても、面取り部に変形を生じさせることなく、幅狭の壁部内のリブ部分のみを減圧変形させることができるという効果がある。

【0055】したがって、壁部の内圧や減圧による変形を、幅狭の壁部内に止めて、商品価値を損わないようにするという効果がある。

【0056】第 3 の発明によれば、第 1 の発明の発明と同様に、幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブによって、内容物の重量や変形した壁部から加わる圧力、さらには熱変形等が加わったとしても、幅狭の壁部全体が膨出変形するのを確実に防止できるという効果がある。

【0057】また、内容物の減容減圧時に、一定の減圧値を越えて減圧変形部に減圧変形力が加わった場合であっても、長手方向中央部領域のリブ深さが減圧変形部の凹部の深さよりも浅くされているため、中央領域のリブが変形して減圧を吸収することができるという効果がある。

【図面の簡単な説明】

【図 1】本発明の一実施例に係る二軸延伸ブロー成形容器の幅広の壁部側からみた正面図である。

【図 2】図 1 の幅狭の壁部側からみた部分破断正面図である。

【図 3】図 1 の III - III 線に沿う断面図である。

【符号の説明】

10 ボトル

20 胴部

22 幅広の壁部

24 幅狭の壁部

26 面取り部

28 溝部

10

20

30

40

50

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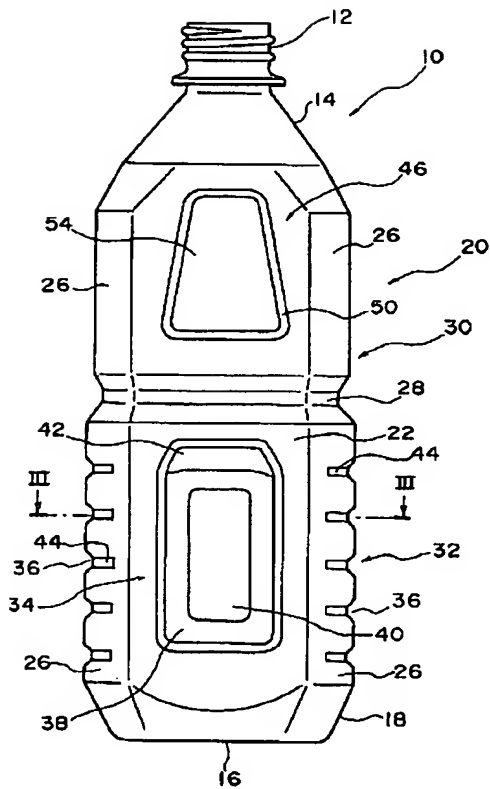
10

30 上胴部
32 下胴部
34 減圧変形部
36 リブ

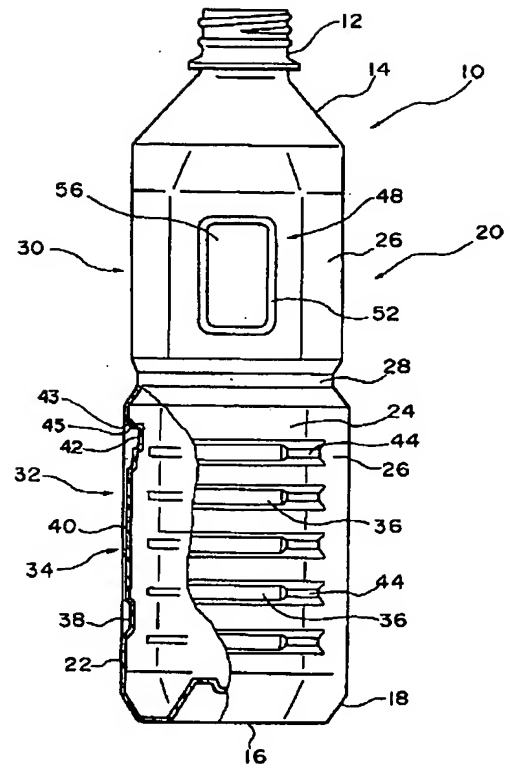
* 38 凹部
42 補強溝
44 延長部

*

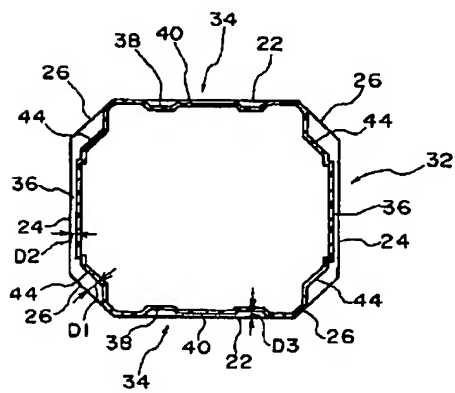
【図1】



【図2】



【図3】



(7)

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【手続補正書】
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 【手続補正 1】
 【補正対象書類名】明細書
 【補正対象項目名】特許請求の範囲
 【補正方法】変更
 【補正内容】
 【特許請求の範囲】

【請求項 1】 幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略長方形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時の減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブを有し、前記リブの長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされていることを特徴とする二軸延伸ブロー成形容器。

【請求項 2】 請求項 1 において、前記両端領域のリブは、面取り部から幅狭の壁部に延長されていることを特徴とする二軸延伸ブロー成形容器。

【請求項 3】 幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略長方形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時に減圧変形する凹部を有する減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブを有し、前記リブの少なくとも長手方向中央領域のリブ深さが、

前記減圧変形部の凹部の深さよりも浅くされていることを特徴とする二軸延伸ブロー成形容器。

【手続補正 2】
 【補正対象書類名】明細書
 【補正対象項目名】0017
 【補正方法】変更
 【補正内容】
 【0017】

【課題を解決するための手段】前記目的を達成するため、第 1 の発明は、幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略長方形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時の減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブを有し、前記リブの長手方向中央領域のリブ深さがその両端領域のリブ深さよりも浅くされていることを特徴としている。

【手続補正 3】
 【補正対象書類名】明細書
 【補正対象項目名】0019
 【補正方法】変更
 【補正内容】

【0019】第 3 の発明は、幅広の壁部及び幅狭の壁部の交差部に面取り部を有し、横断面略長方形に成形された壁部の内、前記幅広の壁部の高さ方向略中央位置下側に、減容減圧時に減圧変形する凹部を有する減圧変形部を設けた二軸延伸ブロー成形容器において、前記幅狭の壁部及びその両隣の面取り部にわたって窪ませたリブを

有し、前記リブの少なくとも長手方向中央領域のリブ深さが、前記減圧変形部の凹部の深さよりも浅くされていることを特徴としている。

【手続補正4】

【補正対象書類名】明細書

【補正対象項目名】0031

【補正方法】変更

【補正内容】

【0031】胴部20は、それぞれ対向位置に配置された一対の幅広の壁部22および幅狭の壁部24を有する横断面略長方形に形成されている。この胴部20には、

各幅広の壁部22および幅狭の壁部24同士の交差部に面取り部26が高さ方向にわたって形成されている。この面取り部26は、幅狭の壁部24よりも幅狭に形成され、幅広の壁部22および幅狭の壁部24の交差部の補強をなすようになっている。すなわち、胴部20は、幅広の壁部22および幅狭の壁部24の各交差部に面取り部26が配置され、しかも面取り部26が幅狭の壁部24よりも幅狭となっているため、各壁部22、24の交差部4カ所が各壁部22、24よりも強度の高い面取り部26によって補強された状態となっている。